

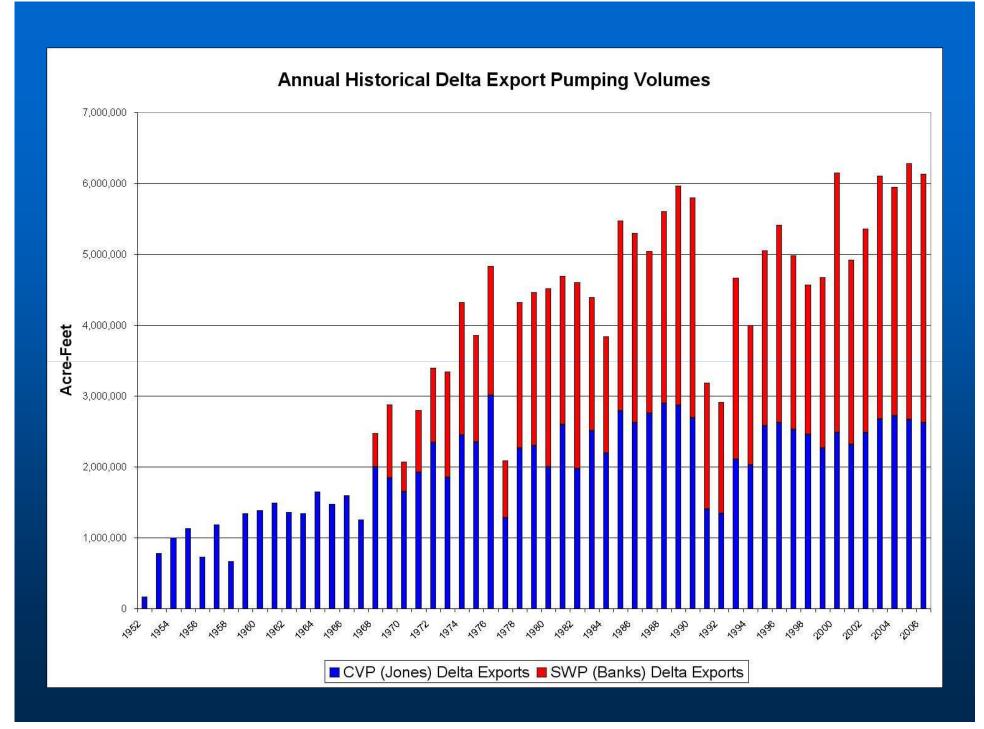
Source: The Bay Institute (1998)

#### Historical Delta

- Vast tidal wetlands
- Dendritic channels
- Seasonal flooding
- Fluctuating salinity
- Connected to floodplains and upper watersheds

### Present Delta

- Levied islands
- Simplified channels
- Managed inflows
- Consistently freshwater
- Contained within levies and interrupted by dams



## Threats to the Delta

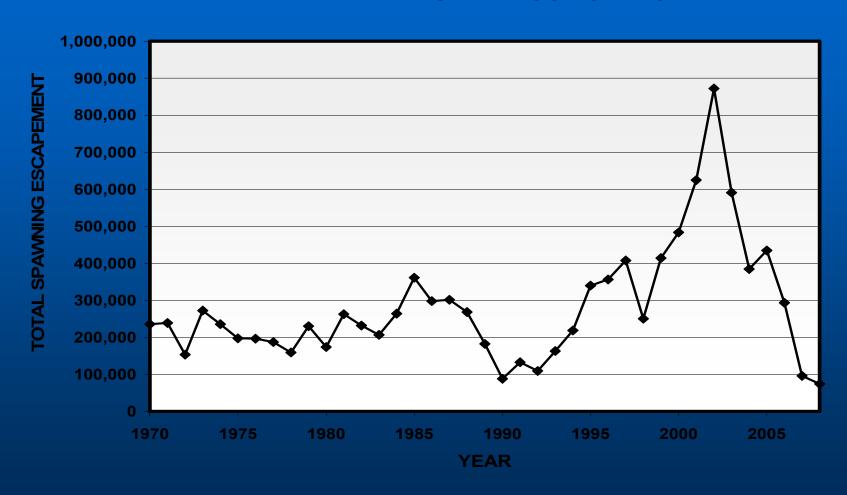
- Climate change
  - Change in hydrologic conditions and runoff patterns
    - Less snowmelt higher floods deeper droughts
  - Sea Level rise
  - Temperatures
- Water Exports (Reverse flow, disruption of tidal influence, etc)
- Toxics
- Invasive Species clams, zooplankton, fish, microcystis
- Seismic issues
- Subsidence
- Random levee failure
- Drinking water quality concerns

## Identified Actions To Restore Many Native Delta Species

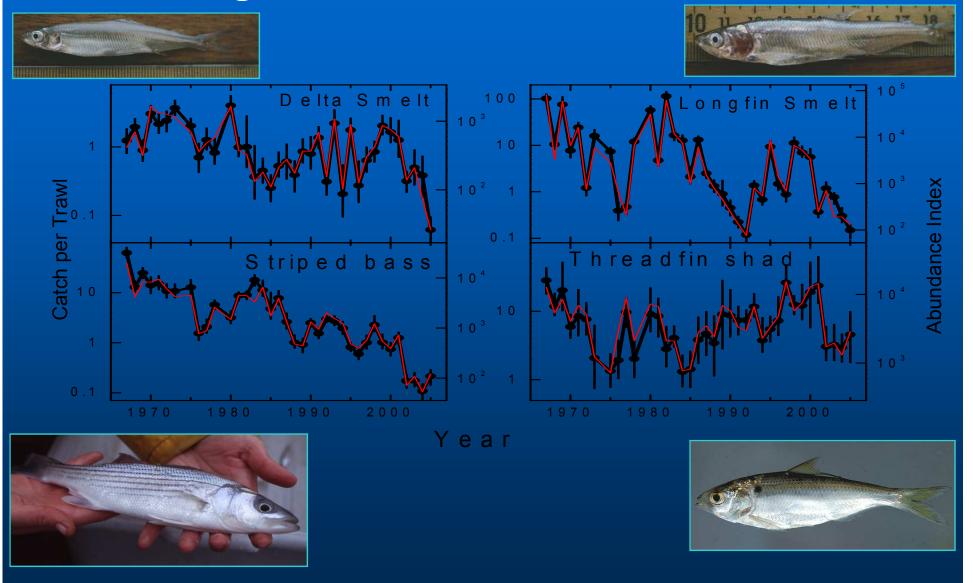




#### **CENTRAL VALLEY FALL-RUN CHINOOK SALMON**



## Pelagic fishes continue to decline



Source: Kimmerer and Nobriga (2005); Sommer et al. (2007)

### Restoration and Recovery Efforts To Date

## **CALFED Bay-Delta Program Accomplishments**

CALFED Objectives

Low Some Significant Year 1-7
Progress Progress Progress State/Federal Expenditures

**Ecosystem Restoration Program** 



#### Accomplishments Snapshot:

- Implemented 795 proječťš'
- 82 fish screens installed/improved
- 55,000 acres agricultural land protected
- 130,000 acres of habitat protected/restored
- Dams/barriers removed for fish

#### **Shortcomings**

 Lack of habitat restoration in the Delta and Suisun

CALFED Bay-Delta Program
Program Performance Assessment
Final Draft as of August 20, 2007

# Existing - ESA Sec.7 /CESA 2081

## BDCP – ESA Sec. 10 / NCCP

- One species at a time
- One Stressor CVP/SWP Operations
- Does not have ability to address to other stressors
- □ Prevention of Jeopardy only, allow for recovery
- Mitigation only
- ☐ Changes in system wide productivity not addressed
- ☐ Unstable water supply reliability and no improvements in fish abundance

- ☐ Habitat Conservation Plan
- ☐ Multiple species needs addressed at the same time
- □ Protection of Natural Communities
- ☐ Multiple Stressors addressed
- □Conservation measures adopted to address major stressors
- ☐ Contributions to the Conservation and Recovery of the system beyond jeopardy and mitigation

Biological Goals
& Objectives For
Covered Fish Species
Improve survival
Improve fitness
Improve distribution
Improve growth rate
Decrease mortality

Habitat Restoration
Conservation Actions

Phytoplankton and

Phytoplankton and zooplankton (fish food)
Spawning and rearing

Other Stressors
Conservation Actions

Reduce contaminants
Reduce predation effects
Improve fish passage
Reduce Disease

**Reduce non-natives** 

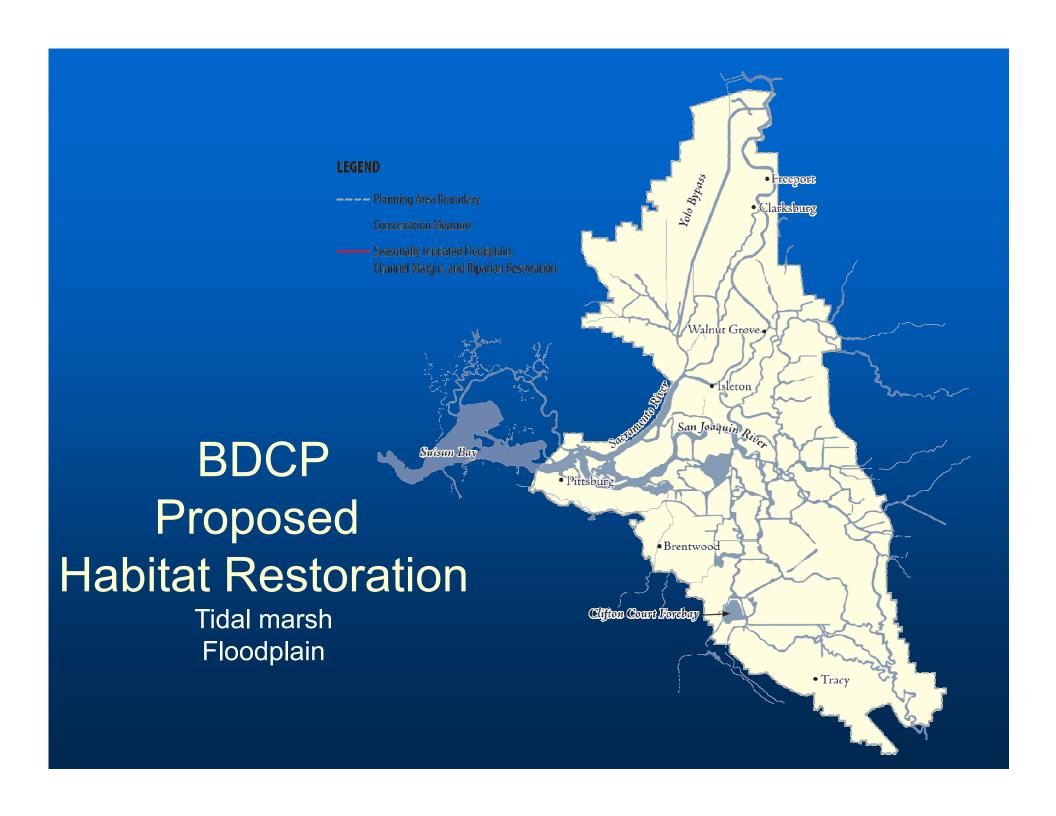
Water Operations
Conservation Actions

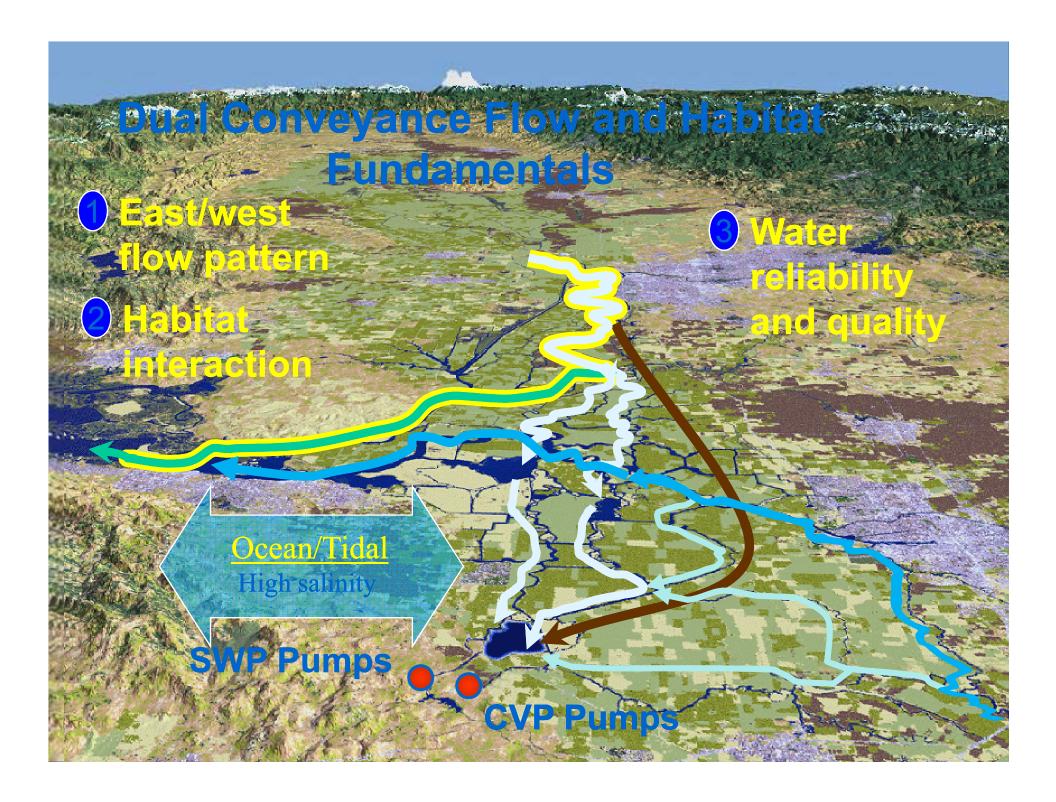
Improve water quality

**Reduce entrainment** 

Improve water flow and habitat conditions

0.08 v3





# Draft Conservation Strategy – Major Elements

#### Habitat Restoration

- Up to 80,000 acres tidal marsh, riparian, and floodplain
- Enhanced floodplain in the Yolo Bypasstemporary inundation
- 20 miles channel restoration

# Water Facilities & Operations

#### North Delta diversion

- ≥5 intakes
- ➤ 15,000 cfs conveyance design capacity
- ➤ Minimum flows to ensure healthy habitat and water quality
- Sacramento River flows are always greater than exports

#### South Delta flows

- ➤ Reduce reverse flows
- Outflow
- Other rules
  - > Delta cross channel
  - > Inflows

#### Other Stressors

- Scientific evaluation of ammonia and endocrine disruptors
- Reduce methylmercury
- Support existing programs to reduce agricultural and urban runoff
- Support detection and removal of invasive species
- Improve hatcheries, allow greater controlled harvest of species in some areas of Delta